

Claims

1. A device for the deformation of workpieces, in particular for the plastic shaping of pipe ends (12),
5 with a shaping unit (U) actuated by the pressure (p2, p3) of a fluid and with a prestressing unit (V) arranged on a common longitudinal axis (X-X) and actuated by the pressure (p1) of a fluid and also with clamping elements (11) of conical design which can be
10 clamped by means of the prestressing unit (V), in each case at least one separate pressure space (D1, D2) being designed in the shaping unit (U) and in the prestressing unit (V), which space can be pressurized independently of the pressure space (D2, D1) of the
15 other unit (V, U) in each case, characterized in that the shaping unit (U) and the prestressing unit (V) are designed as constructional units which are interconnected but completely closed off in relation to one another.
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2. The device as claimed in claim 1, characterized in that the shaping unit (U) and the prestressing unit (V) are closed off in relation to one another by at least one wall (1a, 3a) running transversely to the
25 longitudinal axis (X-X).
3. The device as claimed in claim 1 or 2, characterized in that the pressure spaces (D1, D2) of the shaping unit (U) and of the prestressing unit (V)
30 have a full-area, preferably circular shape in the cross section running transversely to the longitudinal axis (X-X).
4. The device as claimed in one of claims 1 to 3,
35 characterized in that the shaping unit (U) is formed by an in particular double-acting cylinder (1) and by a piston (2) movable axially therein.

5. The device as claimed in one of claims 1 to 4, characterized in that the prestressing unit (V) is formed by an in particular single-acting cylinder (3) and by a piston (4) movable axially therein.

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6. The device as claimed in claim 4 and 5, characterized in that the cylinder (1) of the shaping unit (U) is connected rigidly to form a first main assembly on the one hand to the cylinder (3) or the piston (4) of the prestressing unit (V) and on the other hand to a yoke plate (5) arranged transversely to the longitudinal axis (X-X).

7. The device as claimed in claim 6, characterized in that an opening (5a) for interaction with the clamping elements (11), which is arranged coaxially with the cylinder (1) of the shaping unit (U) and tapers conically away from the shaping unit (U), is located in the yoke plate (5).

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8. The device as claimed in claim 6 or 7, characterized in that the rigid connection between the cylinder (1) of the shaping unit (U) and the yoke plate (5) is formed by tie rods (6a), connecting plates or a tubular housing.

9. The device as claimed in claim 4 and 5 or one of claims 6 to 8, characterized in that the piston (4) of the prestressing unit (V), via an adapter part (7) such as an adapter plate, or the cylinder (3) of the prestressing unit (V) is connected rigidly to form a second main assembly to a driver plate (8), arranged transversely to the longitudinal axis (X-X), for the piston (2) of the shaping unit (U) and to a receiving plate (9), arranged transversely to the longitudinal axis (X-X), for the clamping elements (11).

10. The device as claimed in claim 9, characterized in that the rigid connection between the cylinder (3) or

the piston (4) of the prestressing unit (V) and the driver plate (8) and also the receiving plate (9) is formed by tie rods (6b), connecting plates or a tubular housing.

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11. The device as claimed in claims 4, 6 and 9, characterized in that the piston (2) of the shaping unit (U), the first main assembly and the second main assembly are displaceable relative to one another parallel to the longitudinal axis (X-X).

12. The device as claimed in claim 11, characterized in that the first main assembly or the second main assembly is arranged in a stationary manner, for example connected in a fixed manner to a frame.

13. The device as claimed in one of claims 1 to 12, characterized in that the shaping unit (U), in particular a free end of a piston rod (2a) of the piston (2), has attachment means (2b) for detachable attachment of an upsetting head (10).

14. The device as claimed in one of claims 9 to 13, characterized in that the receiving plate (9) for the clamping elements (11) has attachment means (9a) for detachable attachment of the clamping elements (11).

15. The device as claimed in one of claims 1 to 14, characterized by an upsetting head (10), on which on one side a recess (10a) is designed as the countercontour for a pipe contour to be formed and on the opposite side a connection means (10b), such as a T-groove, for the shaping unit (U) is designed.

16. The device as claimed in one of claims 1 to 15, characterized in that the clamping elements (11) are formed by clamping jaws (11a) which consist of several, preferably four, segments arranged in a ring-shaped manner and each having an outer surface of conical

design, which are guided by means of cylindrical pins (11b) and held in an open position in the unloaded state by means of compression springs (11c).

- 5 17. The device as claimed in one of claims 1 to 16, characterized in that, in the operating state, the pressure space (D1) of the shaping unit (U) is pressurized with a fluid under high pressure (p2) and the pressure space (D2) of the prestressing unit (V) is
10 pressurized with a fluid under low pressure (p1).